

ON A NEW SPECIES OF *AGRIOCNEMIS* SELYS, 1869 (COENAGRIIDAE: ODONATA) WITH DESCRIPTION OF ITS LARVA FROM DEHRA DUN VALLEY, INDIA¹

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(With fifteen text-figures)

INTRODUCTION

Agriocnemis Selys, 1869, is a Oriental genus of Coenagriid damselflies comprising 11 species from the Indian sub-region (Fraser 1933; Sahni 1965). Subsequently Mitra (1975) while reviewing the Indian species of *Agriocnemis* Selys, has doubted the exact identity of *Agriocnemis nainitalensis* Sahni, and suggested inclusion of it in the genus *Ischnura*. Recently, we have been able to breed a new species of this genus, from the larvae collected from a marshy pond at Badripur Vill., Dehra Dun, subsequently 2 more adult females were collected from another marshy perennial pond about 1 km away from type locality at Gorakhpur Village, Dehra Dun. Detailed taxonomic description of the last instar larvae is also given and brief biological notes have been made.

We have pleasure in dedicating this species to Prof. Philip S. Corbet, University of Christchurch, New Zealand, who initiated and constantly encouraged one of us (A.K.) on Odonata biology.

Agriocnemis corbeti sp. nov.

(Figs. 1-7)

ADULT

Male—Holotype: abdomen 19 mm, fore wing 14 mm, hind wing 13 mm. (Emerged in laboratory).

Head: Labrum light cream colour; labium

yellow with anterior border black; anteclypeus brownish-yellow; postclypeus dark brown with anterior border black; mandibles light blue. Frons, face and vertex black. Light blue post ocular coloured spot present, a fine line of same colour almost connecting them. Eyes black above and palest blue beneath.

Prothorax: Light reddish brown; posterior lobe reddish; anterior lobe white.

Thorax: (Fig. 1) brownish red on dorsum; mid dorsal carinal suture blood red; antehumeral stripe blue. A blue stripe present on the metepimeron. Ventrally cream yellow. Hooks on the anterior border of thorax absent. Legs white; distal end of femur black dorsally; spines black; 4 spines present on hind pair of tibiae and 7 spines on corresponding femora.

Wings: (Fig. 2) hyaline; pterostigma similar in shape and size in fore and hind wings, covers less than one cell, diamond-shaped, distal side more oblique than proximal; 9 postnodal nervures in fore wings, 7 in hind wings. Discoidal cell acutely pointed at distal end, costal side of discoidal cell is nearly half of the distal end in forewing and three fourth in hind wing; in fore wing basal side is shorter than costal side; in hind wing it is just half, distal side of discoidal cell oblique. Sectors of arc arising from the lower end of arc and divergent from their origin. Arc situated more distal to the distal antenodal nervures. Nervure A B present and arising well proximal to the AC; A B

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continued as nervure 1A with an angulation (medio-anal line) at the junction of the two; nervures RIV+V arising well before the oblique nervure descending from the subnode.

Abdomen: (Figs. 3 & 4) brick-red in colour, marked with black as follows: Apical joints of segment 2-7 ringed with black. A black triangular spot with a deep notch anteriorly present on the first segment. Segment 2 with a broad squared, black dorsal spot constricted abruptly near the apical annule. Segment 3 with a small black triangular spot on its dorsum which is pointed posteriorly. Seventh segment black on dorsum, constricted in middle and then again dilated upto apical joint as illustrated in the diagram; 8th and 9th segment totally black; and 10th with a small rounded basal black spot on dorsum.

Anal appendages: (Fig. 5) pale yellow; superior as long as segment 10th; pale yellow, tipped with black. It is broad at the base and tapering into a small curled spine at the apices; inferior black, less than half the superior and pointed at tip.

Female—Allotype: abdomen 17 mm, forewing 12 mm, hind wing 11.5 mm. Paratype: abdomen 17-18 mm, fore wing 12-15 mm, hind wing 11.5-12 mm.

Head: Labium light yellow; labrum chocolate brown; ante and postclypeus brownish red, with two small rounded white spot on each side of anteclypeus; mandible light brown. Face frons and vesicle black; occiput rose-red. Chocolate brown post ocular spot present; a fine line of same colour almost connecting them. Eyes similar to male.

Prothorax: Chocolate brown; lateral side pale yellow; posterior lobe rose-red.

Thorax: Chocolate brown; mid dorsal carina red; antehumeral stripe black; metepimeron yellow; ventral side white. Legs brownish

yellow with black spine; distal end of femora black; 4 spines on hind femora of tibiae and 7 on the corresponding femora.

Wings: Similar to male except 7 postnodal nervure in fore wing and 5-6 in hind wing.

Abdomen: (Figs. 6 & 7) brick-red; apical joint ringed with black; 6-10 abdominal segments black on dorsum with two small reddish spots on lateral sides of 7th & 8th segment. Abdomen ventrally yellow.

Anal appendages: yellow, small in size and conical in shape; vulvar scales yellow.

Material examined:

1♂. Holotype: India, Dehra Dun, Badripur Vill. Em. from larva on 10.3.1976, Coll. A. Kumar.

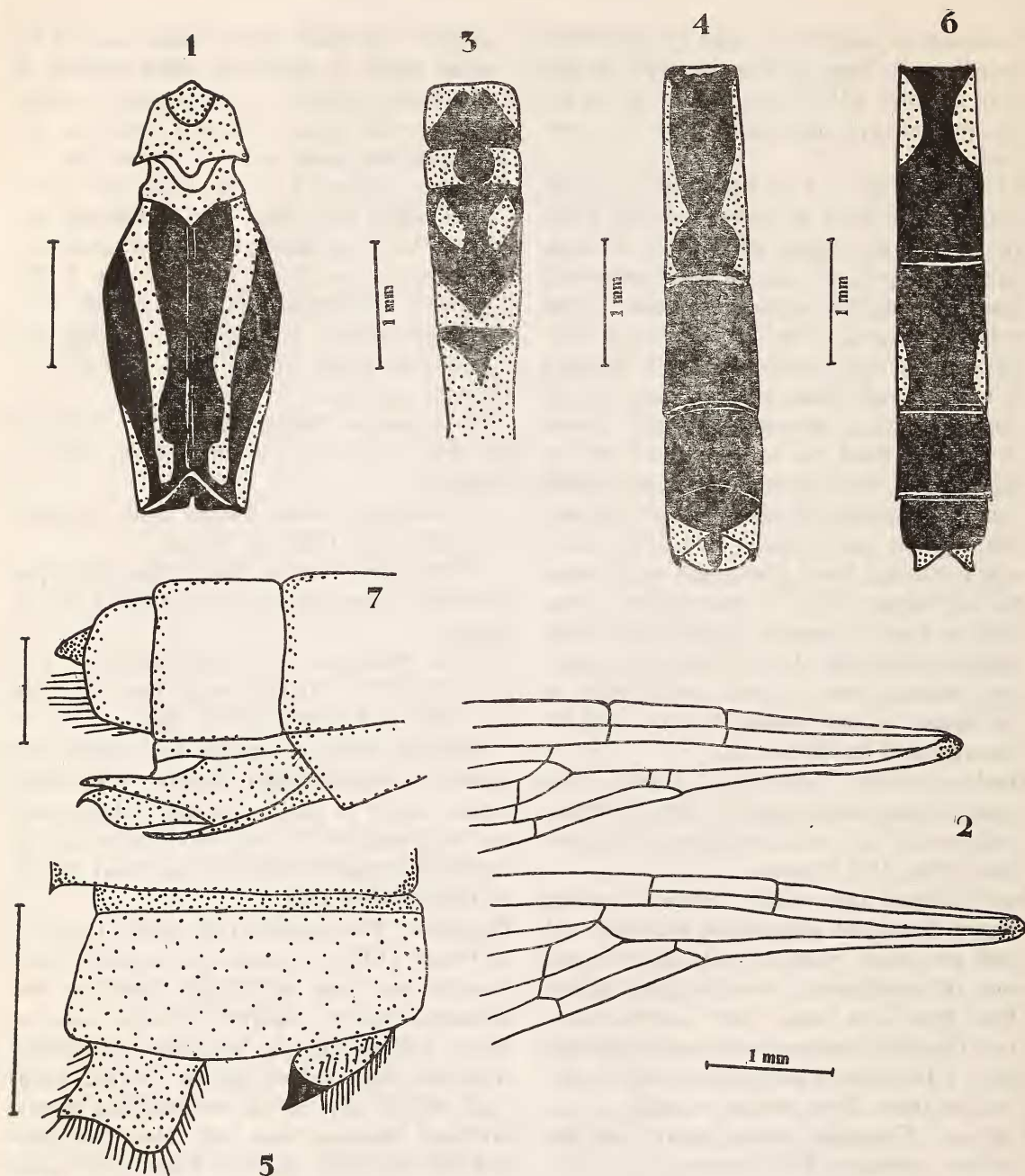
1♀ Allotype; India, Dehra Dun, Badripur Vill. 26.3.1976, Coll. A. Kumar.

1♀ Paratype: India, Dehra Dun, Badripur Vill. Em. from larva on 10.3.1976, Coll. A. Kumar.

3 ♀♀ Paratype: (1 ♀ from Badripur Vill. 26.3.1976) 2 ♀♀, India, Dehra Dun, Gorakhpur Vill., 27.4.1976, Coll. A. Kumar.

Holotype and 2 paratype ♀♀ will be deposited in the National Collection of the Zoological Survey of India, Calcutta; Allotype and rest of paratype ♀♀ will be retained in the Northern Regional Station, Zoological Survey of India, Dehra Dun.

Diagnosis: This species falls under Group 2 of Fraser (1933) in which the labrum is non-metallic and anal appendages more or less homogeneous, the superior is longer than inferior. This species can be easily distinguished from all other known species of the genus *Agriocnemis* Selys by its brownish red thorax, brick-red abdomen and with black markings and can be easily separated from *Agriocnemis pygmaea* (Rambur), *A. clauseni* Fraser and *A. nainitalensis* Sahni from this area in having light reddish brown prothorax; pale yellow



Figs. 1-7 *Agriocnemis corbeti* sp. nov.: (1) thorax of holotype male, dorsal view; (2) wing (partially) of holotype male; (3) anterior abdominal segments of holotype male; (4) posterior abdominal segments of holotype male; (5) anal appendages of holotype male, lateral view; (6) posterior abdominal segments of allotype female; (7) reproductive organs of allotype female.

anal appendages; superior anal appendages pale yellow and tipped with black.

LARVA (Figs. 8-16)

Material: India: U.P., Dehra Dun, Badripur Vill., 8.3.1976, 3 larvae (1♂, 2♀) marshy pond, emerged in Laboratory on 10.3.1976 (♀), 11.3.1976 (♂ Holotype) and (♀ Paratype), Coll. A. Kumar.

Description: Length 17.1 mm (varying from 16.8 to 17.1 mm.); Caudal lamellae (paraproct) 5.7 mm. **Coloration** — uniformly pale brown except caudal lamellae which are darker.

Antennae (Figs. 9 & 10)—filiform, flagellar segments beset with a few setae towards apical half; measurements (in mm) of segments being 0.20, 0.30, 0.36, 0.27, 0.23, 0.14 and 0.11; total length 1.61 mm.

Labium (Figs. 11 & 12)—premental setae 4-4, a few spiniform setae present laterally on prementum; palpal setae 5 & 5, distal margin of palpus divided into two lobes, outer lobe bear 4 distinct and a few small teeth, while the inner terminates into a curved end hook. Movable hook medium-sized about half of the length of palpus.

Tibial comb (Fig. 14)—comprises a number of scattered tridentate setae in between which some long simple setae also present; tarsi beset with a double row of pectinate setae on their outer side.

Gonapophyses—in male triangular process situated ventrally on posterior side of 9th abdominal segment; in female arising from anterior side of 9th segment and extending up to posterior half of 10th segment.

Caudal lamellae (Figs. 15 & 16)—epiproct and paraprocts in the form of fusiform, duplex lamellae; leaflike, with apices ending into narrow process. Mottled with 5 distinct

cross bands in paraprocts, 3 in epiproct from middle to apical end; darkish basally. Tracheation well developed, a number of undulating secondary and tertiary branches arise from the main median trachea. Antenodal region beset with evenly arranged row of spiniform setae (fig. 16). Length epiproct 5.1 mm.; paraprocts 5.8 mm.

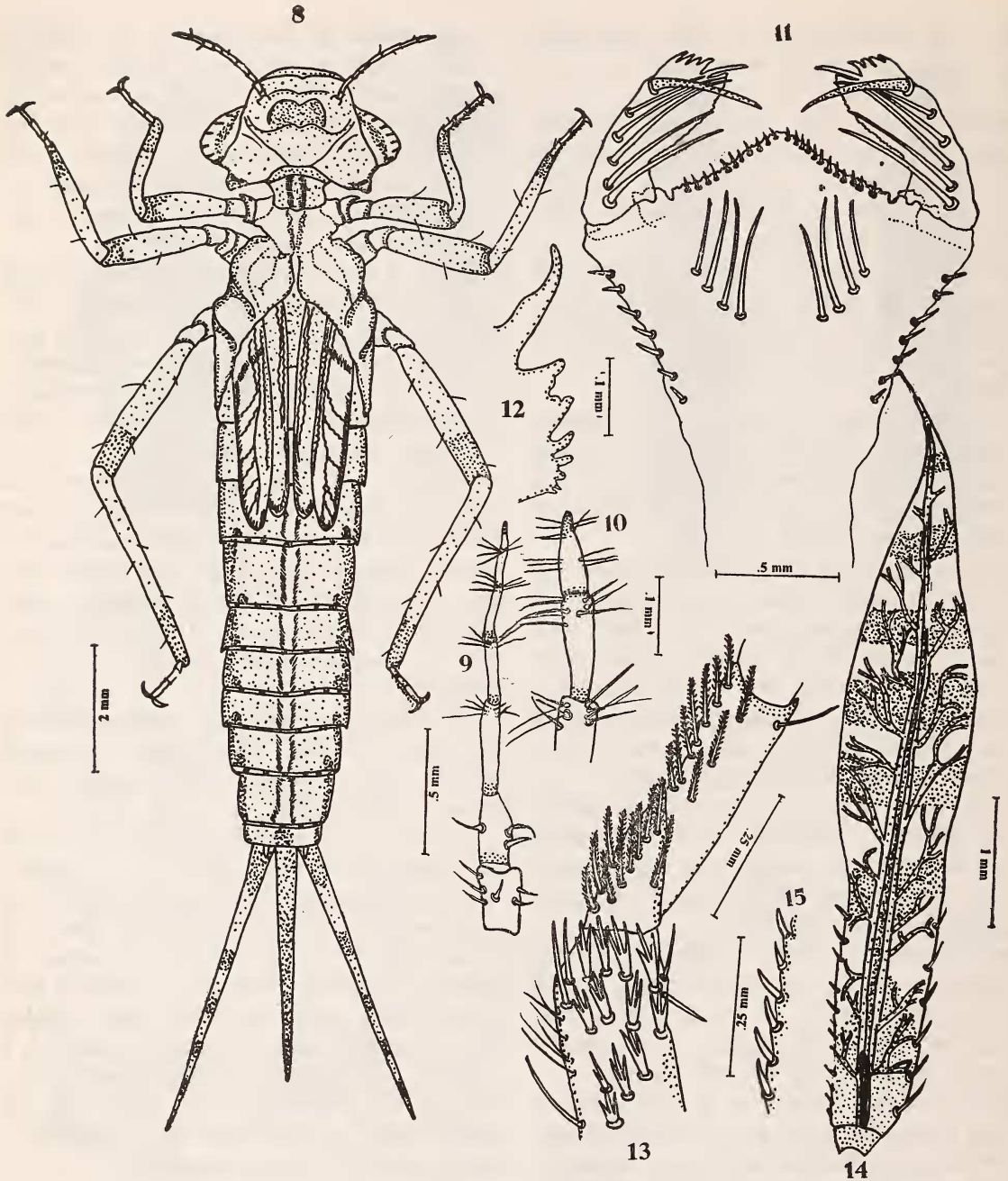
Biology: Larvae have been so far collected only from a marshy pond at Badripur Vill., Dehra Dun. They are active in habit and remain attached to submerged vegetation. The same pond also holds larval population of *Agriocnemis pygmaea* (Rambur) and *Ischnura delicata* (Hagen).

Adults are rare but have been observed on wing from middle of march to end of April. Females were seen flying amidst grass on the marshy bank of the pond. One female was also collected from another perennial pond (Gorakhpur Vill.) on 27.4.1976 about 1 km from type locality of this species.

Diagnosis:

The other two species of *Agriocnemis* from the Indian subregion whose larvae are known are *A. femina* (Lieftinck, 1962) and *A. pygmaea* (Kumar 1973).

Larvae of *A. corbeti* sp. nov. can easily be differentiated from that of *A. pygmaea* by their coloration, size and the number of labial setae (*A. pygmaea* premental setae 3-3; palpal setae 4-4). However, the larvae *A. femina* are close to those of *A. corbeti* in having the same number of labial setae (number being premental setae 4-4, palpal setae 5 & 5 in both) but can be easily differentiated on the basis of size; the larvae of *A. corbeti* are distinctly larger in size (larvae of *A. femina* are only about 12.5 mm in length).



Figs. 8-15. *Agriocnemis corbeti* sp. nov.: (8) last instar larva; (9) antenna; (10) apical antennal segments, enlarged view; (11) labium, oral view; (12) distal margin palpus, enlarged view; (13) tibial comb and tarsi; (14) epiproct; (15) antenodal region epiproct, enlarged view.

NEW DESCRIPTIONS

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REFERENCES

- FRASER, F. C. (1933): Fauna of British India—Odonata I. Taylor & Francis, London.
- KUMAR, A. (1973): Description of the last instar larvae of Odonata from the Dehra Dun Valley (India), with notes on Biology-I. Suborder Zygoptera. *Oriental Ins.*, 7 : 83-118.
- LIEFTINCK, M. A. (1962): Odonata. *Insects of Micronesia* 5 (1): 18-37.
- MITRA, T. R. (1975): A review of Indian species of *Agriocnemis* Selys (Insecta : Odonata : Zygoptera : Coenagrionidae), with a note on *Agriocnemis nainitalensis* Sahni. *Dr. B. S. Chauhan Comm. Vol.* : 403-409.
- SAHNI, D. N. (1965): Studies on the Odonata (Zygoptera) of Nainital. *Indian J. Ent.*, 27 : 205-216.

A NEW SPECIES OF KRAIT OF THE GENUS *BUNGARUS* DAUDIN, 1803 [SERPENTES: ELAPIDAE] FROM THE ANDAMAN ISLAND¹

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(With four text figures)

INTRODUCTION

In course of a study of the reptiles of Andaman and Nicobar Islands in the collections of the Zoological Survey of India we came across four specimens identified earlier as *Bungarus caeruleus* (Schneider) and which showed marked differences from *B. caeruleus* and are now being described as of a new species.

***Bungarus andamanensis* sp. nov.**

Description : Head not distinct from neck; eye with round pupil diameter more than half the distance of eye and the nostril; nostril between two nasals; rostral broader than long; internasal broader than long and shorter than

prefrontal; prefrontal broader than long, length more than half its breadth, touches internasal, postnasal, preocular and supraocular; frontal slightly shorter than its distance from the rostral and touches six shields, excepting frontoparietal all subequal to frontal; frontoparietal largest; no loreal; one preocular in contact with posterior nasal, two postoculars; width of supraocular more than half its length; temporal 1 + 2; 7 supralabials, 1st and 2nd touching nasal, 3rd and 4th in contact with eye, 2nd decidedly narrower than 3rd, 5th highest touching postocular and anterior temporal, 6th largest and broadest and touching anterior temporal; 7 infralabials, 1st longer than 2nd and 3rd, these touch anterior genial, 4th in contact with posterior genial, 6th longest;

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